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SPECIFICATION FOR AXLES WITH BRAKES OF TRAILER FOR POWER TILLERS

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 3

May 1984

Indian Standard

SPECIFICATION FOR AXLES WITH BRAKES OF TRAILER FOR POWER TILLERS

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SPECIFICATION FOR AXLES WITH BRAKES OF TRAILER FOR POWER TILLERS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 29 February 1984, after the draft finalized by the Farm Transport Equipment Sectional Committee had been approved by the Agricultural and Food Products Division Council.

0.2 At present axles of different sizes and types are being used in trailers drawn by power tillers. This makes it difficult for users to buy replacement parts. It is hoped that this standard would help in reduction and rationalization of varieties of axles.

0.3 The figures given in the standard are only for illustration and should not be considered as suggestive of any standard design.

0.4 In preparation of this standard, assistance has been taken from JISB 9208 - 1976 ' Axles with brakes for trailer for power tillers' published by Japanese Standards Association.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard specifies material, dimensions and other requirements for axles with brakes of trailers for power tillers.

2. NOMENCLATURE

2.1 The nomenclature of various parts shall be as given in Fig. 1.

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*Rules for rounding off numerical values (*revised*).

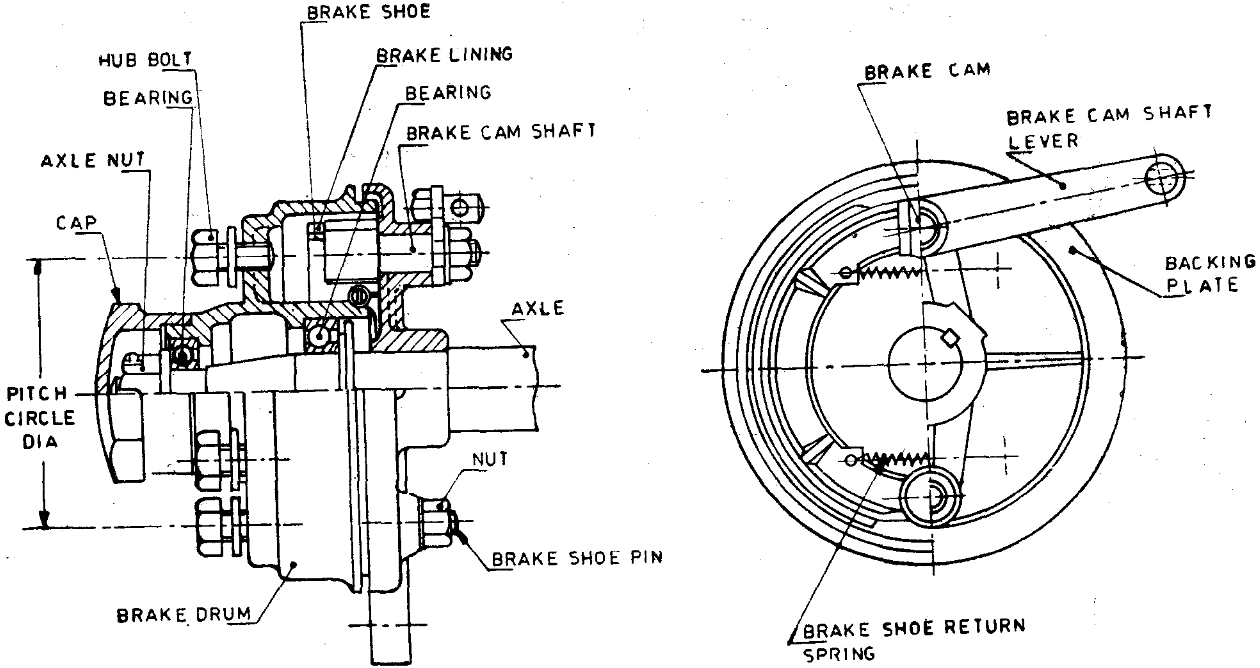

FIG. 1 NOMENCLATURE OF AXLE ASSEMBLY

3. CLASSIFICATION

3.1 The axles with brakes shall be classified in two classes: Class 1 and Class 2, according to the class of brakes.

4. MATERIAL

4.1 The material for various components of the axle with brake shall be as given in col 3 of Table 1. The material may conform to the relevant Indian Standard given in col 4 of Table 1.

TABLE 1 MATERIAL OF CONSTRUCTION OF VARIOUS COMPONENTS

SL No.	COMPONENTS	MATERIAL	APPLICABLE IS :
(1)	(2)	(3)	(4)
i)	Brake drum	Cast iron	IS : 210-1978*
		Steel	IS : 226-1975†
ii)	Backing Plate	do	do
iii)	Brake shoe	Cast iron	IS : 210-1978*
		Steel	IS : 226-1975†
		Cast aluminium	IS : 617-1975‡
iv)	Brake cam shaft	Carbon steel	IS : 7283-1974§
v)	Brake shoe pin	do	do
vi)	Axle	do	do
vii)	Hub	Cast iron	IS : 210-1978*
viii)	*Dust cover/Cap*	do	do

*Specification for grey iron casting (*third revision*).

†Specification for structural steel (standard quality) (*fifth revision*).

‡Specification for aluminium and aluminium alloy ingots and castings for general engineering purposes (*second revision*).

§Specification for hot rolled bars for production of bright bars.

5. DIMENSIONS

5.1 The dimensions when read in conjunction with Fig. 2 shall be as given in Table 2.

6. PERFORMANCE

6.1 When the axle with brake is supported at each wheel fitting part of the brake drum and wheel, and applied at the centre with a load of 2 kN (200 kgf) no part shall show any defective fault such as strain.

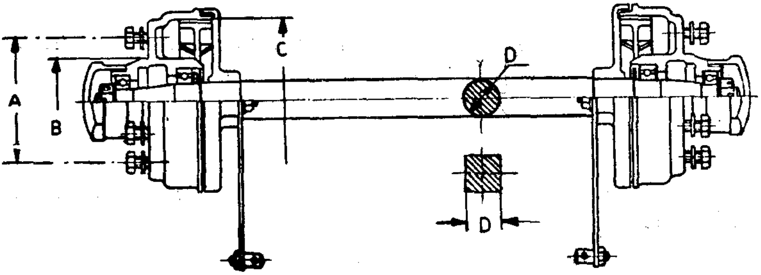

FIG. 2 DIMENSIONS OF AXLE

TABLE 2 DIMENSIONS OF AXLE WITH BRAKE

(*Clause* 5.1)

SL No.	CHARACTERISTICS	DIMENSIONS FOR CLASS OF AXLES		REF TO SYMBOL IN FIG. 2
		Class 1	Class 2	
(1)	(2)	(3)	(4)	(5)
i)	Hub bolt pitch circle diameter, mm	120 ± 0·3	120 ± 0·3	A
ii)	Brake drum and wheel fitting dimension, mm	80 + 0 − 0·2	80 + 0 − 0·2	B
iii)	Inside diameter of Brake drum facing Brake lining, mm	150*	175*	C
iv)	Total area of lining for one brake, cm^2	60 *Min*	70 *Min*	—
v)	Outside diameter or width across flats of axles, mm	28 *Min*	32 *Min*	D

*Recommended dimension.

6.2 When one brake is tested on a suitable testing machine the braking torque generated in the brake shall be 250 to 400 N.m (25 to 40 kgf.m) under the torque of 80 N.m (8 kgf. m) applied on the brake cam shaft. A suggested test method is given in Appendix A.

7. OTHER REQUIREMENTS

7.1 Brake lining shall conform to IS : 2742 - 1964*.

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*Specification for automotive brake lining.

7.3 The axle assembly shall be able to maintain wheel track of 1 200, 1 350 or 1 500 mm.

7.4 The brake drum shall be able to rotate smoothly without slacking when tested with the axle fitted.

7.5 The radial deflection of the brake shall be not more than 0·3 mm on the wheel fitting part of the brake drum and the lateral deflection not more than 0·3 mm on a circle near the pitch circle of hub bolts.

7.6 The brake lining shall be firmly fixed on the brake shoe.

7.7 Assembly particularly inside of the brake shall be leak and dust proof. Oil seals (*see* IS : 5129 - 1979*) and gaskets should be provided.

7.8 The hub shall be packed with multi-purpose grease between the bearings. A grease nipple (*see* IS : 4000 - 1967†) should preferably be provided.

7.9 No oil shall leak on the friction surface of the brake lining.

8. WORKMANSHIP AND FINISH

8.1 Every part shall be of smooth finish and free from cracks, flaws, strain, blow holes or casting defects.

8.2 The surfaces which have been treated for anti-corrosion shall be free from defects, such as wrinkle, unevenness and scar.

9. DESIGNATION

9.1 The axle shall be designated by the number of this standard, class and the track width.

Example:

An axle assembly of class 1 and for wheel track 1 200 mm shall be designated as :

Axle 1 × 1 200 — IS : 10807

10. SAMPLING

10.1 The sampling of the axle for lot acceptance shall be done in accordance with IS : 7201 - 1974‡.

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*Specification for rotary shaft oil seal units (*first revision*).

†Specification for grease nipples.

‡Method of sampling of agricultural machinery and tractors.

11. MARKING

11.1 The axle shall be marked with the following particulars:

a) Manufacturer's name and/or recognized trade-mark;

b) Designation; and

c) Batch or code or serial number.

11.1.1 The axle may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

APPENDIX A

(*Clause* 6.2)

METHOD OF TESTING BRAKE TORQUE

A-1. TESTING MACHINE

A-1.1 The testing machine shall be made of a static brake testing machine equipped with one spiral scale as shown in Fig. 3.

A-2. METHOD

A-2.1 Firmly bind the brake on the testing machine and place the mass *W* suitable for applying a torque of 80 N.m (8 kgf. m) on the brake cam shaft. Adjust the position of the angle adjusting stand so that the tension acts on the brake cam shaft lever always perpendicular to it. At this time bring the position of the torque farm to point *a*. Read the indication of the spiral spring scale (*A*), while the torque arm is moving from the point *a* to the point *a* by the operation of the torque handle. Read the load on the load/strain diagram. Take the product of this load and the length of the torque arm as the statical braking torque.

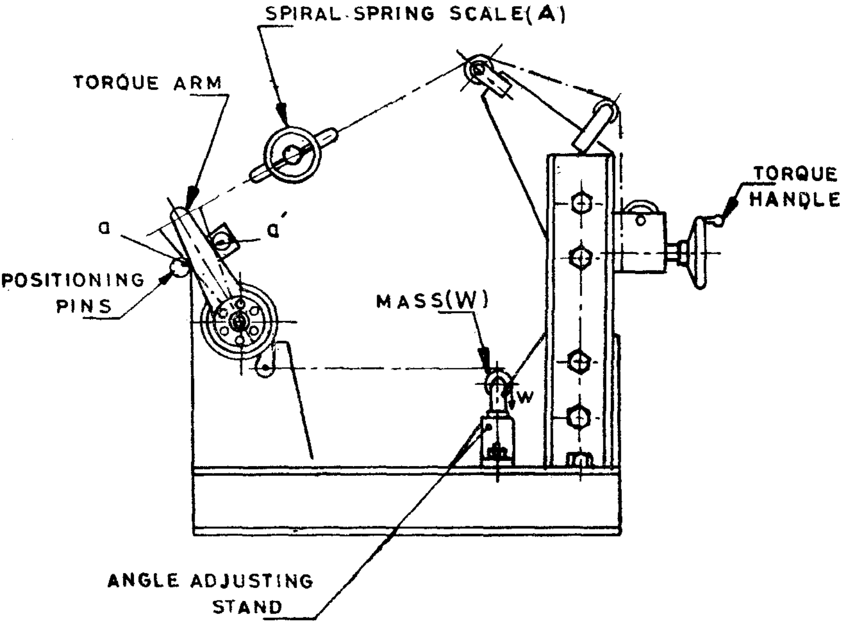

FIG. 3 TYPICAL BRAKE TESTING MACHINE

INDIAN STANDARDS ON FARM TRANSPORT EQUIPMENT

IS :

4930-1968	Guide for axle assembly for animals drawn vehicles
8213-1983	Agricultural trailer (*first revision*)
8463 (Part I)-1977	Axle assembly for agricultural tractor trailers : Part I Load carrying capacity up to 5 tonnes
9821-1981	Glossary of terms relating to farm transport equipment
10806-1984	Trailers for power tillers
10807-1984	Axles with brakes for power tillers.